

MEMORY ARCHITECTURE FOR MICROMIRROR CELL

ABSTRACT

5 A one transistor one capacitor micromirror with DRAM
memory cell built around a large polysilicon-to-substrate
capacitor which is not susceptible to recombination of
photo-generated carriers caused by illumination in the
projector. This large polysilicon-to-substrate capacitor
overshadows the much smaller inherent parallel depletion
capacitance which is sensitive to light. The device is
10 further 100% shielded from exposed light by metal layers
and the address node is located under the center of the
micromirror mirror to obtain maximum shielding of light
for the smaller, light sensitive, depletion portion of
the capacitance. As a result the micromirror of this
15 invention can adequately hold the cell charge in excess
of the device load time of 300 μ Sec even in extremely
high brightness projector applications. This invention
also provides a feature which automatically forces
micromirror mirrors located over bad CMOS memory cell to
20 the dark state, which is much less objectionable in most
applications, thereby improving the overall effective
processing yield.